The Immature Stages of Some Chironomini (Chironomidae)

William M. Beck, Jr. and Elisabeth C. Beck

Descriptions of the larvae and pupae of the nine species included in this paper are based on cast skins of specimens reared during the course of a study of the Florida Chironomidae. All except *Paralauterborniella nigrohalteralis* are previously undescribed, although Darby (1962) does give figures for some parts of the larva and pupa of *P. elachista*. Since *P. nigrohalteralis* was described by Lenz (1962) in European literature, we felt it would be worthwhile to include a redescription here. One new species, *Einfeldia austini*, is described as adult, larva, and pupa.

Omisus pica Townes

Larva (Fig. 1*a-d*). Head capsule pale yellow, labial and mandibular teeth dark brown. Labial plate with 14 teeth, median pair shorter than first laterals and roughly triangular; first and second laterals close together and longer than other teeth; paralabials striate to anterior margin; mandible with pale dorsal, dark apical and three dark lateral teeth, accessory tooth pale, slender, curved, reaching almost to apex of second lateral tooth. Antennal ratio 100:18:23:18:8.5, lauterborn organs at apex of second and third segments, blade to middle of fourth; inner margin of mandible with two to four fine spines, apical comb and basal brush present; claws of posterior prolegs yellow, curved; anal papillae with seven or eight pale bristles.

Pupa (Fig. 2*e-f*). Brown, 6.5 mm long; cephalic tubercle very small, acutely pointed, with short subapical bristle. Tergite I bare, II with anterior and posterior shagreen and a posterior row of about 20 dark hooks; III-V with fine shagreen and a pair of patches of dark brown spines set in a brown area just anterior to middle of the segment. In addition IV has on each caudo-lateral area a patch of anteriorly directed coarse brown spines; VI with faint shagreen on anterior half; VII and VIII bare. Caudo-lateral spur of VIII composed of about eight paler spines; lateral filaments of V-VIII: 3-3-4-5-; anal fins widely brown on lateral margins with 30-32 filaments on each lobe.

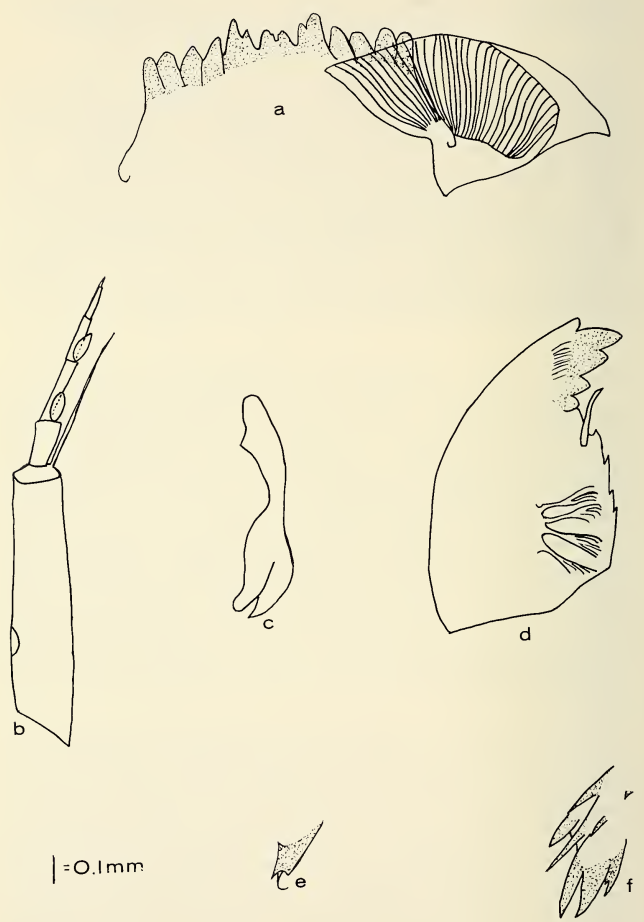

Fig. 1. *Omisus pica,* details of larva (*a-d*) and pupa (*e-f*). *a* labial plate and paralabial, *b* antenna, *c* premandible, *d* mandible, *e* cephalic tubercle, *f* lateral spur on segment VIII.

Paralauterborniella elachista (Townes)

Larva (Fig. 2*a-d*). Head capsule very pale yellow, labial plate with two long pale median teeth and five dark laterals, the first notched on inner margin; paralabials fairly short, pointed at median ends; premandible pale yellow with three broad blades and a lateral projection; mandible with pale dorsal tooth, a dark apical and three dark laterals, accessory tooth long, curved, pointed at apex, both brush and mandibular comb present. Antennal ratio 50:12: 14:10:7:4, blade to apex of third segment. Anal papillae with seven long bristles.

Pupa (Fig. 2*e*). Very pale, with cephalothorax slightly brownish, 2.7 mm long. No cephalic tubercles, but a long bristle. Tergite II has posterior row of 28 hooks and a band of shagreen anterior to this. Tergites III-VI with a median area of shagreen with heavier spines on anterior and posterior parts; intersegmental spines on IV-V; tergite IV with whorls of spines near caudo-lateral border. Segment VIII has caudo-lateral spur of two smaller and one large brown spines. Lateral filaments on V-VIII: 4-4-4-5; anal fins with 22—24 lateral filaments plus one smaller, about half way from base on outer margin.

Paralauterborniella nigrohalteralis (Malloch)

Larva (Fig. 2*f-i*). Head capsule light brown, occipital rim darker; labial plate with median domed clear tooth and six pointed dark laterals on each side; paralabials long and pointed at ends; pre-mandible yellow with two slender blades; mandible with apical tooth golden yellow and four small lateral teeth slightly darker yellow; antennal ratio 50:16:12:4:6:6, blade to apex of fourth segment; claws of posterior prolegs simple, yellow; anal papillae with long yellow bristles.

Pupa (Fig. 2*j-k*). Dark grey-brown, 2.7 mm long; cephalic tubercles large, pointed, with long subapical bristle. Segment I has anterior lateral lobes; segment II has posterior lateral lobes. Tergite II has about 18 almost colorless hooks in posterior row; tergites II-V with broad median longitudinal band of shagreen; intersegmental spines on III-IV and IV-V. Tergites VII and VIII without shagreen, VIII with a caudo-lateral spur of three or four dark

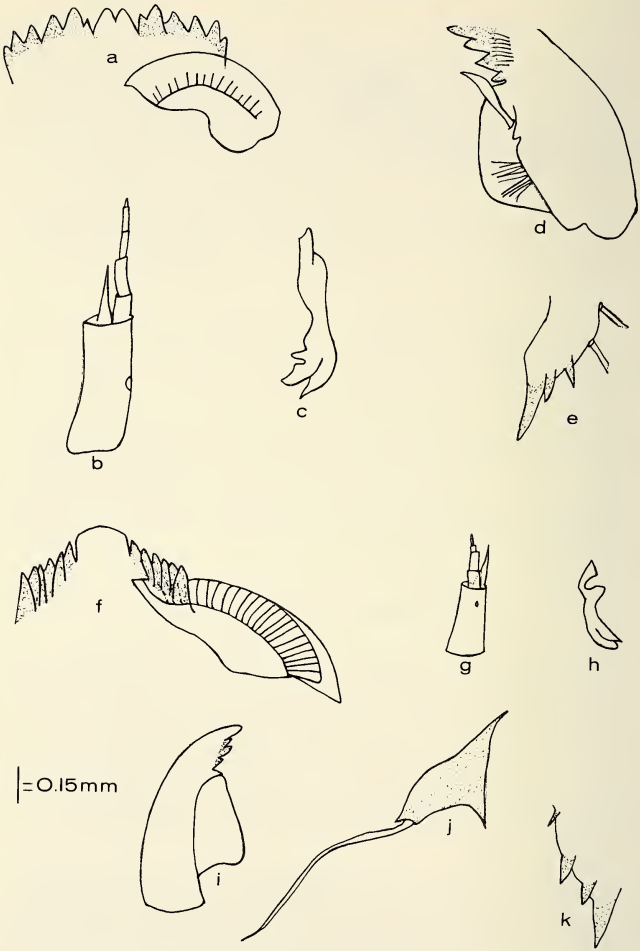

Fig. 2. *Paralauterborniella elachista,* details of larva (*a-d*) and pupa (*e*). *a* labial plate and paralabial, *b* antenna, *c* premandible, *d* mandible, *e* lateral spur on segment VIII. *Paralauterborniella nigrohalteralis,* details of larva (*f-i*) and pupa (*j-k*). *f* labial plate and paralabial, *g* antenna, *h* premandible, *i* mandible, *j* cephalic tubercle, *k* lateral spur of segment VIII.

spines; lateral filaments on V-VIII: 4-4-4-4; anal fins with 20-25 lateral filaments, plus one on the disc about four-fifths from base of segment.

Stenochironomus hilaris (Walker)

Larva (Fig. 3*a-c*). Head capsule golden brownish, labial teeth and apical half of mandible black. Labial plate with ten teeth, the outer three projecting on each side. Antennal ratio 50:13:6:6:?; claws of anterior prolegs strongly curved, mostly short.

The larvae of known *Stenochironomus* species are buprestid-like, having a broad flat thorax and a very slender long abdomen; prolegs are retractile except for the claws. The paralabials, unlike those of all other known genera of Chironominae, are not striated.

Pupa (Fig. 3*d*). Light brown, about 8.7 mm long; cephalic tubercles low, rounded, lobe-like, no bristle; tergite I bare, II-V with anterior band of heavy spines and most of segment covered in fenestrated shagreen, apical band of spines separated from shagreen on V; VI with T-shaped patch of fine shagreen and a broad apical band of heavier spines; VII and VIII bare; VIII with caudo-lateral spur of four broad blunt golden spines. Tergite II has apical band of golden hooks almost as wide as the segment; intersegmental spines on IV-V; lateral filaments on V-VIII: 4-4-4-5; anal fin with 85-90 lateral filaments.

Stenochironomus aestivalis Townes

Larva (Fig. 4*a-c*). Head yellow-brown, labial teeth and apical one-third or more of mandible black. Antennal ratio 50:18:5:8:2, blade to apex of second segment; claws of anterior prolegs golden, small, strongly curved and dense; claws of posterior prolegs blackish.

Pupa (Fig. 4*d*). Light brown, approximately 5 mm long; cephalic tubercles are wrinkled rounded lobes, no bristle. Tergite I with faint median shagreen; II has apical row of small hooks, the row only about one-third as wide as the segment; tergites II-VI with broad median longitudinal band of shagreen, the spines finest in the middle of each segment; VII has similar median band of shagreen, much finer; VIII has antero-lateral patches of fine shagreen, and a small median patch; lateral filaments on V-VIII: 4-4-4-5; caudo-lateral spur on VIII has one or two very large, heavy, short

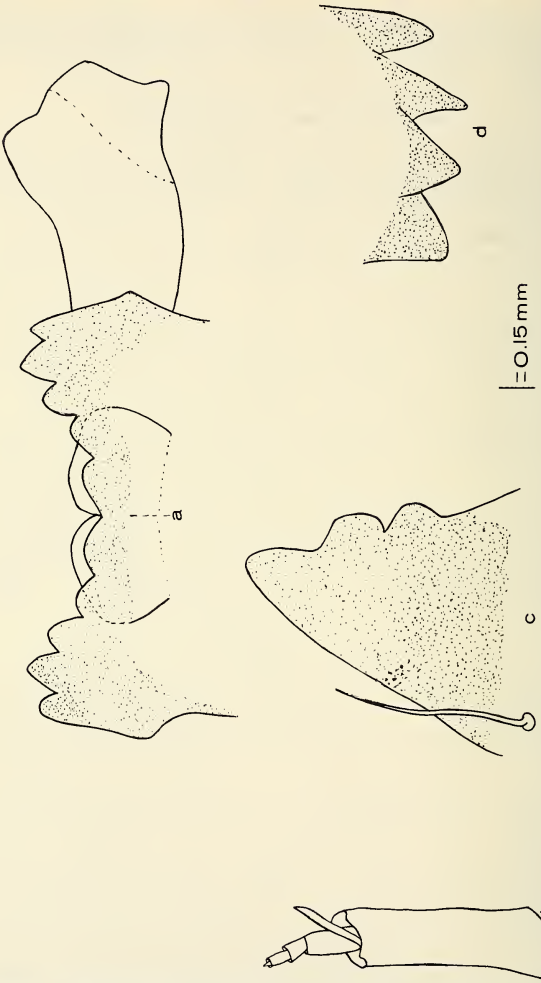

Fig. 3. *Stenochironomus hilaris,* details of larva (*a-c*) and pupa (*d*). *a* labial plate and paralabial, *b* antenna, *c* mandible, *d* lateral spur of segment VIII.

pale spines and may have two to four mueh smaller spines; about 56 lateral filaments on anal fin, plus a small one on dise near outer margin one-half way from base.

Stenochironomus cinctus Townes

Larva (Fig. 4*e-g*). Head yellow-brown, labial teeth and about apical third of mandible blaek. The larvae of *cinctus* and *aestivalis* are very similar. The characters whieh appear to separate them are: shape of paralabial plate, shape of hypopharangeal plates, and length of outer bristle of mandible. Since we have so few reared specimens (only one female of *cinctus*) it is impossible to be certain these characters will be consistent for a species.

Pupa (Fig. 4*h*). Pale brown, cephalothorax darker, about 6 mm long; cephalic tubercles low, wrinkled. Tergite I has faint shagreen medially; II has dense fine shagreen and a posterior row of hooks which is less than one-half the width of the segment; tergites III-VI with broad median longitudinal band of shagreen, finer at middle of the band; some of the anterior spines on IV are multiple, double to quadruple; tergite VII mueh as III-VI, but with finer shagreen; VIII has antero-lateral patches of fine shagreen and a caudo-lateral spur of one large and one small coarse pale spines; segments V-VIII bear 4-4-4-5 lateral filaments; about 52 lateral filaments on each lobe of the anal fins.

Nilodorum devineyae (Beck) new eombination

Larva (Fig. 5*a-d*). Head capsule light brown, gular area darker. Labial plate with trilobed median and six laterals, the second lateral close to first; paralabials almost meeting at midline and finely striated to anterior edge; mandible with light dorsal tooth, dark apieal and three dark laterals, eomb and brush present on mandible, accessory tooth long and stout, reaching to third lateral tooth; antennal ratio 50:15:12:10:2, blade to middle of fourth segment; premandibles with two blades, the outer thin; elaws of posterior prolegs yellow; anal papillae with seven bristles. No anal gills.

Pupa (Fig. 5*e-f*). Dark brown, 6.4 mm long; cephalic tubercles very small, acute, with short bristle; tergite I without shagreen, somewhat wrinkled in appearance laterally, with a pair of small clear spots caudo-medially; tergites II-VI almost covered with sha-

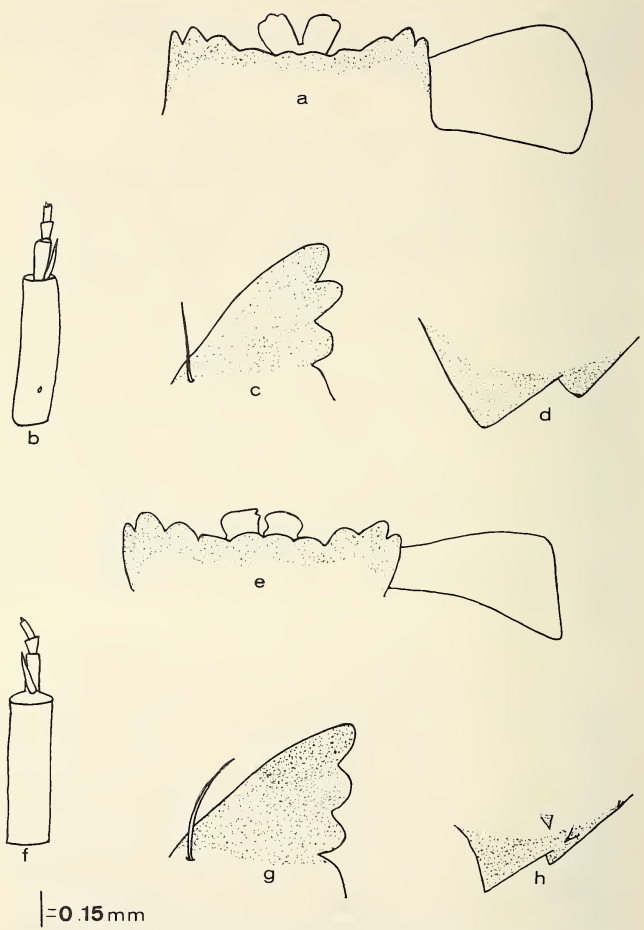

Fig. 4. *Stenochironomus aestivalis,* details of larva (*a-c*) and pupa (*d*). *a* labial plate and paralabial, *b* antenna, *c* mandible, *d* lateral spur on segment VIII. *Stenochironomus cinctus,* details of larva (*e-g*) and pupa (*h*). *e* labial plate and paralabial, *f* antenna, *g* mandible, *h* lateral spur on segment VIII.

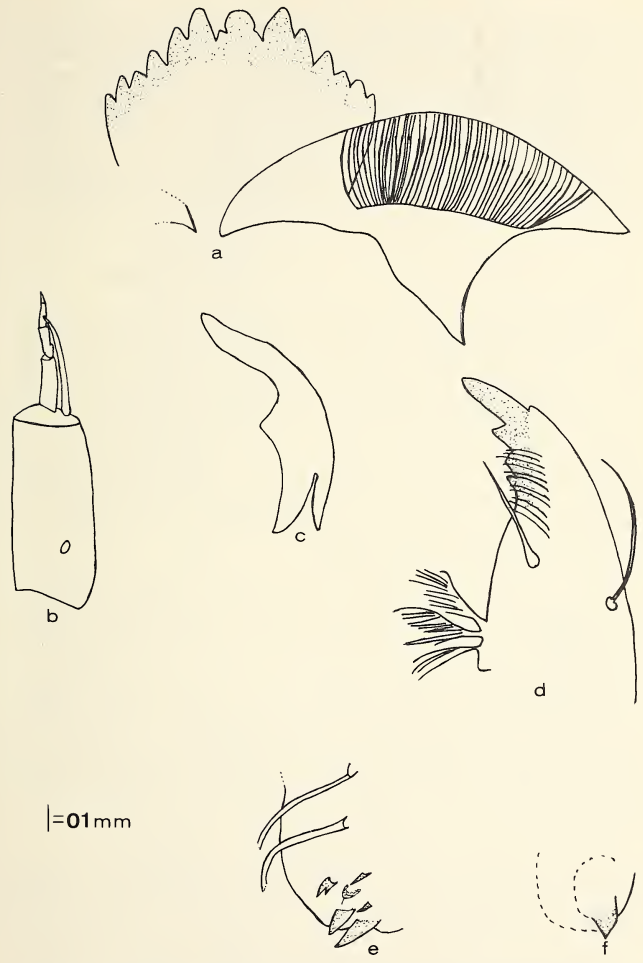

Fig. 5. *Nilodorum devineyae,* details of larva (*a-d*) and pupa (*e-f*). *a* labial plate and paralabial, *b* antenna, *c* premandible, *d* mandible, *e* lateral spur of segment VIII, *f* cephalic tubercle.

green which has heavier spines near base and caudal margins, and a clear median area near caudal margin; II has posterior row of dark hooks, more than one-half as wide as the segment; IV has caudo-lateral whorls of fine spines; VII and VIII have antero-lateral patches of fine shagreen; spur on VIII with two to five small dark spines; lateral filaments on V-VIII: 4-4-4-5; anal fins with fine shagreen on anterior one-fourth, about 40 lateral filaments on each lobe and one on disc about three-tenths from base of fin.

Kiefferulus dux (Johannsen) new combination

Larva (Fig. 6*a-d*). Head capsule light brown, labial teeth and teeth of mandible very dark brown; labial plate with trilobed median and six laterals, the second lateral smaller than the first and not completely separated from it; paralabials with fine striae to anterior margin; mandible with pale dorsal tooth, dark apical and three dark pointed laterals, shoulder squared, not darkened, accessory tooth pale, broad and serrate at apex; antennal ratio 100:34: 24:20:5, blade to apex of fourth segment; premandible broad with six darkened blades; claw of posterior prolegs yellow, curved; anal papillae with seven yellow bristles.

Pupa (Fig. 6*e-f*). Brown, 6.3 mm long; cephalic tubercles acutely pointed at apex with short subapical bristle; tergite I bare, II with posterior row of about 35 stout hooks; II-V with dense shagreen, spines heavier and suggesting paired patches apically on tergites IV and V; VI with subbasal band of fine spines and posterior median patch of heavier spines; intersegmental spines III-IV, IV-V, V-VI and VI-VII; lateral whorls of fine spines on IV; VII and VIII bare; spur on VIII composed of seven or more small spines; lateral filaments V-VIII: 4-4-4-5; about 90 lateral filaments on each lobe of anal fins.

This larva differs from that described by Johannsen (1937) in that he says "basal antennal segment two times as long as rest together." Johannsen's description of the pupa differs in having "Hook row II interrupted for a short distance in middle". Johannsen says that the larva of *insolita* Kieffer differs (from *dux*) ". . . . and in that it has a pair of gills on segment 11 . . . .". The larva of *K. dux* does have a pair of gills on segment 11 also.

Fig. 6. *Kiefferulus dux*, details of larva (*a-d*) and pupa (*e-f*). *a* labial plate and paralabial, *b* antenna, *c* premandible, *d* mandible, *e* cephalic tubercle, *f* lateral spur of segment VIII.

Einfeldia austini new species

Male Holotype. Duval County, small creek, sphagnum drainage, near junction of U.S. 1 and U.S. Alternate 1, September 14, 1963. *Paratypes*: Same location and date, two males and four females.

Male. Head light brown, pedicel of antenna ochraceous, flagellum brown, palpi lighter brown; PO bristles multiple, not in one row; frontal tubercles two times as long as basal diameter; thorax light brown with medium brown to ochraceous mesonotal vittae, scutellum and sternum; postnotum almost black; PA bristles three, DL bristles about 10 in single row; halter knob not darkened; wing and veins brown, without macrotrichia, but appearing densely punctate. AR 2.76; WL 1.95 mm.

Abdomen medium brown, paler on posterior borders of segments IV-VI. Forelegs dark brown from middle of femora to apex; middle and hind legs darker toward apex; middle tibia with two spines (one tibia of holotype has three spines, but this is apparently an abberation). LR 1.9-2.0. Genitalia as in Fig. 7g.

This species differs from *E. dorsalis* in having shorter wing length, in the shape of the base of the superior appendage, and the shape of anal point. It differs from *E. natchitocheae* in wing length and details of male genitalia, as well as in immature stages. For comparison, *E. dorsalis* has a WL 3.2 mm, AR 3.0, LR 1.7; *E. natchitocheae* has WL 2.61 (2.39-2.7)mm, AR 3.0, LR 2.2; and *E. austini* has WL 1.95 mm, AR 2.76, LR 1.9-2.0.

Larva (Fig. 7*a-d*). Head capsule pale, occipital rim and teeth of mandible and labial plate dark brown. Labial plate with median trilobed tooth and six laterals, the first and second laterals not completely separated. Premandibles with two broad darkened blades. Antennal ratio 50:24:6:8:3, blade to middle of fourth segment. Anal papillae short with seven long pale bristles.

Pupa (Fig. 7*e-f*). Brown, 5.7 mm long; cephalic tubercles fairly large with preapical bristle. Tergite I bare, II with median longitudinal band of shagreen and posterior row of approximately 60 hooks. Tergites III-V with broad median longitudinal shagreen band; VI with shagreen band narrower, especially in the middle; VII with antero-lateral patches of shagreen, and VIII with an area of fine shagreen on each side of midline; lateral filaments on V-VIII:

Fig. 7. *Einfeldia austini,* details of larva (*a-d*), pupa (*e-f*) and male genitalia (*g*). *a* labial plate and paralabial, *b* antenna, *c* premandible, *d* mandible, *e* cephalic tubercle, *f* lateral spur of segment VIII.

4-4-4-4; caudo-lateral spur on VIII as in Fig. 7*f*; anal fins with 44 lateral filaments plus a small filament near outer margin, about one-half way from base of fin.

We take pleasure in naming this species for Dr. Oliver E. Austin, Jr., friend and editor, a rare combination indeed.

Acknowledgment

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Florida Department of Air and Water Pollution Control, Suite 300 *Tallahassee Bank Bld., Tallahassee, Florida* 32301 *and Department of Health and Rehabilitative Services, Division of Health, Box* 210, *Jacksonville, Florida* 32201.